

AMENDMENTS TO THE CLAIMS

1-13 (Canceled)

14. (New) A ball bearing comprising:

an outer ring including on the inner peripheral surface thereof an outer ring raceway having an arc-shaped section;

an inner ring including on the outer peripheral surface thereof an inner ring raceway having an arc-shaped section; and

a plurality of balls respectively interposed rollably between said outer and inner ring raceways,

wherein, where the outside diameter of said outer ring is expressed as D, the inside diameter of said inner ring is expressed as d, the pitch circle diameter of said respective balls is expressed as Dp, the following equations (1), (2), (3) and (4) can be satisfied:

$$(1) \quad x = D_b / \{D - d\} / 2\},$$

$$(2) \quad y = D_p / \{(D + d) / 2\},$$

$$(3) \quad x \geq 0.3, \text{ and}$$

$$(4) \quad y < 1.0,$$

wherein, where the diameter of said respective balls is expressed as D_b, the radius of curvature of the section shape of said outer ring raceway is expressed as R_o, and the radius of curvature of the section shape of said inner ring raceway is expressed as R_i, the following equations (5) and (6) can be satisfied:

$$(5) \quad 0.53 < R_o / D_b \leq 0.65, \text{ and}$$

$$(6) \quad 0.52 < R_i / D_b \leq 0.65.$$

15. (New) The ball bearing according to claim 14, wherein the diameter of an inner ring raceway whose maximum circumferential stress provides 294 MPa (30 kgf/mm²) under the condition that, in case where d is in the range 6 - 10 mm, the interference of said inner ring is

11 μm and in case where d is in the range of more than 10 mm up to 18 mm, the interference of said inner ring is 12 μm , is expressed as D_i , the following equation (7) can be satisfied:

$$(7) \ y \geq \{(D - d) / (D + d)\} x + 2D_i / (D + d) .$$

16. (New) The ball bearing according to claim 14, wherein, in case where the inside diameter d of said inner ring is less than 6 mm, under the condition that the interference of said inner ring is expressed by a curved line allowing the following three points, which are plotted in perpendicular coordinates in which the inner ring inside diameter d is shown in one of the vertical and horizontal axes thereof and the inner ring interference is shown in the other, to be smoothly continuous with one another,

a first point where said inner ring interference is 6 μm for said inner ring inside diameter of 5 mm,

a second point where said inner ring interference is 2 μm for said inner ring inside diameter of 4 mm, and

a third point where said inner ring interference is 1 μm for said inner ring inside diameter of 3 mm,

when the diameter of an inner ring raceway providing the maximum circumferential stress of 294 MPa (30 kgf/mm²) is expressed as D_i , the following equation (8) can be satisfied:

$$(8) \ y \geq \{(D-d) / (D+d)\} x + 2D_i / (D+d).$$

17. (New) The ball bearing according to claim 14, wherein said outer ring, said inner ring and said balls are made of bearing steel.

18. (new) The ball bearing according to claim 14, wherein the value of y is set equal to or less than 0.95.

19. (New) The ball bearing according to claim 14, wherein the value of y is set equal to or less than 0.9.